1. (currently amended) An ultrasonic diagnostic imaging system probe comprising:

an ultrasonic transducer array ~~(12)~~;

an integrated circuit ~~(13)~~ coupled to the ultrasonic transducer array which acts to process or control transducer array signals;

a fuel cell ~~(90)~~ coupled to the integrated circuit ~~(13)~~ for energizing the integrated circuit ~~(13)~~; and

a source of fuel coupled to the fuel cell ~~(90)~~.

2. (currently amended) The ultrasonic diagnostic imaging system probe of Claim 1, further comprising a transceiver ~~(62)~~, coupled to the integrated circuit ~~(13)~~, which acts to communicate between the probe ~~(12)~~ and an ultrasound system.

3. (currently amended) The ultrasonic diagnostic imaging system probe ~~(12)~~ of Claim 1, wherein the integrated circuit ~~(13)~~ further comprises a beamformer integrated circuit.

4. (currently amended) The ultrasonic diagnostic imaging system probe of Claim 1, further comprising a power converter ~~(92)~~, coupled to the fuel cell ~~(90)~~ and the transducer array ~~(12)~~, which produces a stepped up voltage level in response to the power level produced by the fuel cell ~~(90)~~,

wherein the fuel cell ~~(90)~~ further acts to energize the transducer array ~~(12)~~.

5. (currently amended) The ultrasonic diagnostic imaging system probe of Claim 1, further comprising a capacitor, coupled to the output of the fuel cell ~~(90)~~, which acts to store energy for peak load conditions.

6. (currently amended) The ultrasonic diagnostic imaging system probe of Claim 1, wherein the source of fuel comprises a replaceable fuel cartridge or ampule ~~(96)~~.

7. (currently amended) The ultrasonic diagnostic imaging system probe of Claim 6, wherein the fuel cartridge or ampule ~~(96)~~ contains a methanol- or alcohol-based fuel.

8. (currently amended) The ultrasonic diagnostic imaging system probe of Claim 1, wherein the fuel cell ~~(90)~~ further comprises an anode ~~(72)~~, a cathode ~~(78)~~, and an ion exchange membrane ~~(76)~~ located between the anode ~~(72)~~ and the cathode ~~(78)~~.

9. (currently amended) The ultrasonic diagnostic imaging system probe of Claim 8, wherein the fuel cell ~~(13)~~ further comprises a catalyst metal ~~(74)~~ which acts to promote the separation of hydrogen ions in the fuel cell ~~(90)~~.

10. (currently amended) A handheld ultrasonic diagnostic imaging system comprising:

an ultrasonic transducer array ~~(12)~~;

an integrated circuit ~~(13)~~ coupled to the ultrasonic transducer array ~~(12)~~ which acts to beamform signals produced by or for the transducer array ~~(12)~~, and to process beamformed signals for display;

a display panel ~~(16)~~ coupled to the integrated circuit ~~(13)~~;

a fuel cell ~~(90)~~ coupled to the integrated circuit ~~(13)~~ and the display panel ~~(16)~~ for energizing the integrated circuit ~~(13)~~ and the display panel ~~(16)~~; and

a source of fuel coupled to the fuel cell ~~(90)~~.

11. (currently amended) The handheld ultrasonic diagnostic imaging system of Claim 10, further comprising a control panel ~~(20)~~ for operating the handheld ultrasonic diagnostic imaging system; and

a case ~~(81)~~ which houses the integrated circuit ~~(13)~~ and the control panel ~~(20)~~.

12. (currently amended) The handheld ultrasonic diagnostic imaging system of Claim 11, wherein the case ~~(80)~~ further houses the display panel ~~(87)~~, the fuel cell ~~(90)~~, and the source of fuel.

13. (currently amended) The handheld ultrasonic diagnostic imaging system of Claim 10, further comprising a power converter ~~(92)~~, coupled to the fuel cell ~~(90)~~ and the transducer array ~~(12)~~, which produces a stepped up power level in response to the power level produced by the fuel cell ~~(90)~~,

wherein the fuel cell further acts to energize the transducer array ~~(12)~~.

14. (currently amended) The handheld ultrasonic diagnostic imaging system of Claim 10, further comprising a capacitor, coupled to the output of the fuel cell ~~(90)~~, which acts to store energy for peak load conditions.

15. (currently amended) The handheld ultrasonic diagnostic imaging system of Claim 10, wherein the source of fuel comprises a replaceable fuel cartridge or ampule ~~(96)~~.

16. (currently amended) The handheld ultrasonic diagnostic imaging system of Claim 15, wherein the fuel cartridge or ampule ~~(96)~~ contains a methanol- or alcohol-based fuel.

17. (currently amended) The handheld ultrasonic diagnostic imaging system of Claim 10, wherein the fuel cell ~~(90)~~ further comprises an anode ~~(72)~~, a cathode

~~(78)~~, and an ion exchange membrane ~~(76)~~ located between the anode ~~(72)~~ and the cathode ~~(78)~~.

18. (currently amended) The handheld ultrasonic diagnostic imaging system of Claim 17, wherein the fuel cell further comprises a catalyst metal ~~(74)~~ which acts to promote the separation of hydrogen ions in the fuel cell ~~(90)~~.

19. (currently amended) The handheld ultrasonic diagnostic imaging system of Claim 10, wherein the display panel ~~(87)~~ is further responsive to the source of fuel for the display of the amount of fuel remaining in the fuel source.

20. (currently amended) An ultrasonic diagnostic imaging system comprising:

an ultrasonic transducer array probe ~~(12)~~;

an ultrasound signal path ~~(14)~~ coupled to the transducer array probe ~~(12)~~;

an image display ~~(87)~~ coupled to the ultrasound signal path ~~(14)~~;

a control panel ~~(20)~~ coupled to the ultrasound signal path ~~(14)~~;

a source of a.c. power coupled to energize the ultrasound signal path ~~(14)~~;

a fuel cell ~~(90)~~ coupled to energize the ultrasound signal path ~~(14)~~; and

a source of fuel coupled to the fuel cell ~~(90)~~.

21. (currently amended) The ultrasonic diagnostic imaging system of Claim 19, wherein the ultrasound signal path is located in the system chassis ~~(101)~~ of a tabletop ultrasound system.

22. (currently amended) The ultrasonic diagnostic imaging system of Claim 19, wherein the ultrasound signal path ~~(14)~~, the image display ~~(16)~~, the control panel ~~(20)~~, the fuel cell ~~(90)~~ and the source of fuel are mounted on a wheeled cart.

23. (currently amended) The ultrasonic diagnostic imaging system of Claim 19, wherein the image display ~~(16)~~ is further responsive to the source of fuel for the display of the amount of fuel remaining in the fuel source.

24. (currently amended) An ultrasonic diagnostic imaging system comprising:

an ultrasonic transducer array ~~(12)~~;

an ultrasound signal processor coupled to receive signals from the array probe ~~(12)~~;

an ultrasound image processor coupled to receive signals from the signal processor;

an image display ~~(16)~~ coupled to the image processor which acts to display images produced by the image processor; and

a fuel cell ~~(90)~~ and fuel supply unit ~~(46)~~, coupled to provide energy to one or more of the array probe ~~(12)~~, the signal processor, the image processor, and the image display ~~(16)~~,

wherein the fuel cell ~~(90)~~ and fuel supply unit ~~(46) is~~ are removable from the diagnostic imaging system for replacement by another fuel cell ~~(90)~~ and fuel supply unit ~~(46)~~ by a user of the ultrasonic diagnostic imaging system.